



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,826	09/10/2003	Sudhakar K. Rao	091-0201	5968
27431	7590	06/21/2005	EXAMINER	
SHIMOKAJI & ASSOCIATES, P.C. 8911 RESEARCH DRIVE IRVINE, CA 92618			DINH, TRINH VO	
			ART UNIT	PAPER NUMBER
			2821	
DATE MAILED: 06/21/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,826

Applicant(s)

RAO ET AL.

Examiner

Trinh Vo Dinh

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed 05/18/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39 is/are rejected.
- 7) ☒ Claim(s) 1,2,4-38 and 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Applicant's communication filed on 05/18/2005 has been carefully considered by the examiner. The arguments advanced therein are persuasive with respect to the rejections of record, and those rejections are accordingly withdrawn. In view of a further search, however, a new rejection is set forth below. This action is not made final.

Drawings

1. The drawings (Figs. 2 and 4) were received on 05/18/2005. These drawings are acceptable.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Rao et al (US 2003/0142014 A1 of record) in view of Ergene et al (US Pat. 6,812,807 B2).

Respecting claim 39, an apparatus discussed below would perform the claimed method.

Rao discloses, in Fig. 1 and abstract, an antenna system (10) comprising a plurality of high-efficiency multi-mode circular horns (abstract), wherein said feed array being focused at a lowest frequency band (downlink frequencies band), and said feed array is defocused at a highest frequency band (uplink frequencies), a shaped reflector (12) for forming congruent

Art Unit: 2821

multi-band beams that are contiguous (Fig. 2). However, Rao does not suggest an OMT/polarizer. Ergene discloses an OMT/polarizer (170, 180) for forming multi-band beams. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Ergene's teaching of using the polarizer for forming antenna beams since beam polarizer are well known devices for providing a plane polarized beam and for using as filters for allowing the passage of light polarized in particular direction.

Allowable Subject Matter

4. Claims 1-38 are presently allowed.
5. The following is a statement of reasons for the indication of allowable subject matter:
The cited art of record fails to teach multi-beam, multi-band feed array comprising
 - a) a feed array forms a plurality of multi-band beams wherein each of the beams propagating signals over at least three frequency bands as defined in claims 1, or b) the feed array is focused at the highest frequency band and at an intermediate frequency band and defocused at a lowest frequency band as defined in claims 10, 23 and 40, or c) the feed horns are placed on a spherical cap with a radius of a distance from an aperture center of said reflector to said focal point, said radius of said spherical cap centered at the aperture center as defined in claim 12, or d) a compact 6-port OMT/polarizer wherein said feed array provides dual-circular polarization capability at each of three distinct frequency bands as defined in claims 13 and 27-28, or e) the reflector is oversized at an intermediate frequency band in that a reflector having aperture D with unmodified paraboloid shape produces a beam size at the intermediate frequency band that is smaller than the required beam size as defined in claim 15, or f) the reflector is sized to have an aperture D according to $D = 70 \times (\text{wavelength})$ (at

Art Unit: 2821

20.2 GHz)) / (half-power beam-width) to produce said required beam size at a K-band frequency as defined in claim 22.

Inquiry

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh Vo Dinh whose telephone number is (571) 272-1821. The examiner can normally be reached on Monday to Friday from 9:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art unit 2821

A handwritten signature in black ink, appearing to read 'Trinh Vo Dinh', followed by a long horizontal line.

Trinh Vo Dinh
June 16, 2005